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BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60610

EXAMINER	
MUMMERT, STEPHANIE KANE	
ART UNIT	PAPER NUMBER
1637	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/562,371	**Applicant(s)** HASTWELL ET AL.	
	Examiner STEPHANIE K. MUMMERT	**Art Unit** 1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/1/07*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

The preliminary amendment, amending claims 1, 11, 12, and 13, filed December 22, 2005 is acknowledged and has been entered.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on March 1, 2007 was filed in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang (US PgPub 2002/0136978; September 2002; 102(e) for corresponding issued US Patent 6,855,501; February 15, 2005; citations will be applied based on the PgPub document, with the earlier publication date).

With regard to claim 1, Huang teaches a substrate adapted for selective micron and nanometer scale deposition, the substrate having; a support (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials); a conductive layer on the support (p. 2, paragraph 13, where the support includes

chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface); a dielectric layer of a material which will hold an electrostatic charge (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials such as glass); and a chemically functional layer, the chemically functional layer providing a protective layer for the dielectric layer and a chemically reactive surface for compounds deposited on the surface (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass); whereby electrostatic charge patterns may be formed in a predetermined manner upon or in the substrate (Figure 7, where electrostatic charge patterns are formed through illumination of selected regions, exposing locations for coupling and where the remainder of the support is charged; see also p. 2, paragraph 23, p. 3, paragraph 31).

With regard to claim 2, Huang teaches a claim 1 wherein the support is selected from the group comprising a metal, glass, ceramic, or polymeric material and the support is clear or opaque and flexible or rigid (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials).

With regard to claim 3, Huang teaches an embodiment of claim 1 wherein the conductive layer is combined with the support (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface and therefore where the layer is combined with the support).

With regard to claim 4, Huang teaches an embodiment of claim 1 wherein the conductive layer is a very thin layer and is transparent (p. 2, paragraph 13, where the support includes

chargeable particles less than 50 um in diameter and is therefore 'very thin'; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface).

With regard to claim 5, Huang teaches an embodiment of claim 1 wherein the conductive layer conductive layer is vacuum-deposited onto the support (p. 5, where the substrate is coated using a variety of techniques for deposition including forming a thin film; and where it is noted that the claim is drawn to a product by process and absent a showing that the process of applying the conductive layer imposes a structural difference in the final product, any type of deposition which places the conductive layer on the substrate anticipates the claim).

With regard to claim 6, Huang teaches an embodiment of claim 1 wherein the conductive layer is selected from the group comprising a sputtered layer of metal or indium tin oxide, or a carbon nano-tube layer (p. 2, paragraph 14, where the support can comprise carrier particles comprising metal oxides including zinc oxide; p. 12, paragraph 165, where the support can be coated, metals or metal oxides may also be used).

With regard to claim 7, Huang teaches an embodiment of claim 1 wherein the dielectric layer is selected from the group comprising a glass, a polymeric resin and a methylmethacrylate (MMA) (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials such as glass).

With regard to claim 8, Huang teaches an embodiment of claim 1 wherein the dielectric layer is a photoconductor (Figure 7, where the support is considered a photoreceptor and where the photoreceptor comprises the support, conductive layer comprising charged material and a dielectric layer of the support which can hold the charged particles).

With regard to claim 9, Huang teaches an embodiment of claim 8 wherein the photoconductor is selected from the group comprising zinc oxide, cadmium sulphide, lead sulphide, lead selenide, amorphous selenium, doped selenium, alloys of selenium including selenium-tellurium, selenium-arsenic, organic photoconductive materials including polyvinylcarbazole (PVK) and complexes of polyvinylcarbazole sensitised with trinitrofluorenone (p. 2, paragraph 14, where the support can comprise carrier particles that include metal oxides including zinc oxide).

With regard to claim 10, Huang teaches an embodiment of claim 1 wherein the chemically functional layer is a material selected from the group comprising a silane polymer, silicon dioxide, silicon nitride (SixNy), titanium dioxide, Tyzor TM, cross-linked or partially cross-linked epoxy novolac resins, polymerised oligomers, cross-linked resins, functionalised parylene (a polymer of di-para-xylyene), acrylates and methacrylates which may include functional groups, multi-functional acrylates and methacrylates, monomers which have been crosslinked with a photoinitiator (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass).

With regard to claim 11, Huang teaches a substrate having;

a support (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials); a conductive layer on the support (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface); a photoconductive

layer of a material which is adapted to have an electrostatic charge thereon selectively dissipated upon receiving incident radiation (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface and where the charge can be dissipated upon illumination); and a chemically functional layer, the chemically functional layer providing a protective layer for the photoconductive layer and a chemically reactive surface for compounds deposited on the surface (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass);

whereby electrostatic charge patterns may be formed in a selected array upon the substrate to influence the movement of charged droplets in a liquid medium on the substrate (Figure 7, where the conductive layer is exposed to illumination, forming a charge pattern on the substrate and where nucleotides are attracted to the exposed portions; p. 12, paragraph 171-175, where the process of applying the basic substrate to the manufacture of arrays of biopolymers and incorporating protecting groups is described; p. 2, paragraph 17, where the particles are in liquid form).

With regard to claim 12, Huang teaches a substrate adapted for manufacture of DNA arrays, the substrate having:

a support (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials); a conductive layer on the support (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface); a photoconductive

layer of a material which is adapted to have an electrostatic charge thereon dissipated upon receiving incident radiation (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface and where the charge can be dissipated upon illumination); and a chemically functional layer, the chemically functional layer providing a protective layer for the photoconductive layer (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass); whereby electrostatic charge patterns may be formed in a selected array upon the substrate to influence the movement of charged droplets in a liquid medium on the substrate (Figure 7, where the conductive layer is exposed to illumination, forming a charge pattern on the substrate and where nucleotides are attracted to the exposed portions; p. 12, paragraph 171-175, where the process of applying the basic substrate to the manufacture of arrays of biopolymers and incorporating protecting groups is described; p. 2, paragraph 17, where the particles are in liquid form); the chemically functional layer comprising at least in part a chemically active material to which a binder molecule can be attached, whereby a selected electric charge pattern may be generated upon the substrate by incident radiation to enable selective chemical de-protection of the binder molecules or DNA oligomers already joined to a binder molecule and application of nucleotides to selected binder molecules or to DNA oligomers already joined to a binder molecule (Figure 7, where the conductive layer is exposed to illumination, forming a charge pattern on the substrate and where nucleotides are attracted to the exposed portions; p. 12, paragraph 171-175, where the process of

applying the basic substrate to the manufacture of arrays of biopolymers and incorporating protecting groups is described).

With regard to claim 13, Huang teaches a substrate adapted for manufacture of DNA arrays, the substrate having:

a support (p. 12, paragraph 164-167, where the support is a substrate with a rigid surface, comprised on plastics, resins, silica or silica-based materials); a conductive layer on the support (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface); a photoconductive layer of a material which is adapted to have an electrostatic charge thereon selectively dissipated upon receiving incident radiation (p. 2, paragraph 13, where the support includes chargeable particles; Figure 7, where 150 comprises the photoreceptor and comprises a conductive layer on the surface and where the charge can be dissipated upon illumination); and a chemically functional layer, the chemically functional layer providing a protective layer for the photoconductive layer (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass, and where this comprises the chemically functional layer of the support);

whereby electric charge patterns may be formed in a selected array upon the substrate to influence the movement of charged droplets in a liquid medium on the substrate (Figure 7, where the conductive layer is exposed to illumination, forming a charge pattern on the substrate and where nucleotides are attracted to the exposed portions; p. 2, paragraph 17, where the particles are in liquid form); the chemically functional layer providing a surface to which a binder

molecule can be attached (p. 12, paragraph 164, where the solid surface can include reactive groups such as carboxyl groups, amino groups, hydroxyl groups and the like and paragraph 165, where the substrate can be composed of silica or silica-based materials such as glass).

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loewy et al. (WO00/25936; May 2000) teaches a method for controlled electrostatic deposition of particles onto a substrate.

Conclusion

No claims are allowed. All claims stand rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHANIE K. MUMMERT whose telephone number is (571)272-8503. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephanie K. Mummert/
Patent Examiner, Art Unit 1637

SKM